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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,731	09/15/2003	Edward T. Tanner	21323.000331	1688

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EXAMINER

RODRIGUEZ, PAMELA

ART UNIT PAPER NUMBER

3683

DATE MAILED: 09/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/662,731

Applicant(s)

TANNER, EDWARD T.

Examiner

Pam Rodriguez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-30,34,35,42 and 43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-24,26-30,34,35,42 and 43 is/are rejected.
- 7) ☒ Claim(s) 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 11, 2006 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 21-24, 29, 30, 34, 35, 42, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent no. 5,652,704 to Catanzarite in view of U.S. Patent no. 3,559,027 to Arsem.

Regarding Claim 21, Catanzarite discloses a shock and vibration isolation system for mounting equipment to a base wall (see Figure 1), the system comprising: a load plate 11 configured for attachment of the equipment thereto; a base plate 13 configured for attachment to the base wall; the base plate 13 being substantially parallel

to the load plate 11 (see Figure 1), a spring arrangement 17 disposed intermediate the load plate and the base plate, the spring arrangement 17 engaging the load plate and the base plate to bias the load plate and the base plate in a separated relationship (see Figure 1); a magnetorheological/semi-active damper 22 disposed intermediate the load plate and the base plate, the semi-active damper 22 being adapted for providing a selectively variable reaction force to the load plate and the base plate responsive to a relative displacement of the load plate with respect to the base plate; and a damper controller 42 disposed intermediate the load plate 11 and the base plate 13 (see Figure 1 which clearly shows the controller 42 in between the load and base plates 11 and 13) and operatively connected to the semi-active damper 22 for controlling the reaction force applied to the load plate and the base plate, the damper controller 42 including a rechargeable power supply 21.

However, Catanzarite does not disclose a recharging arrangement in electrical communication with the rechargeable power supply, the recharging arrangement comprising a piezoelectric generator and being mounted to one of the base plate and the load plate and being adapted for converting vibratory motion to electrical energy for storage in the rechargeable power supply.

Arsem is relied upon merely for his teachings of an isolation system having a damper controller and recharging arrangement 4 which can include a piezoelectric generator (see column 1 line 55 –column 2 line 1) in communication with a rechargeable power supply 3 and which is mounted to either a base plate or a load plate through the shock absorber itself.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the recharging arrangement of Catanzarite to include a piezoelectric generator as taught by Arsem as an alternate equivalent means of recharging the power supply. As long as the recharging arrangement is capable of converting vibratory motion to electrical energy for storage in the rechargeable power supply, the means used to do so is arbitrary.

Regarding Claim 22, see step S1 discussed in the Catanzarite reference wherein the rate (i.e., velocity of the damping system) is used to calculate the force output. See also steps S11 and S12 of Catanzarite where displacement is used to determine a force factor.

Regarding Claim 23, Catanzarite further discloses a current driver 35 operatively connected to the semi-active damper 22 and the power supply for selectively supplying current to energize the semi-active damper 22; a damper force control module in communication with the optimum force determination module and the current driver 35, the damper force control module being adapted for controlling the supply of current to the semi-active damper according to a predetermined control algorithm (see column 2 lines 53 et al and Figure 3 of the reference).

Regarding Claim 24, Catanzarite, as modified, does not disclose the specifics of the control algorithm claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the control algorithm of Catanzarite, as modified, to be selected from the group consisting of clipped optimal control, velocity

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feedback control and acceleration bang-bang control dependent upon the operating environment of the isolation system. As long as the damper force control module is adapted to control the supply of current to the semi-active damper, the algorithm used to perform this function is arbitrary.

Regarding Claim 29, see Claim 21 above and note that Catanzarite, as modified, does not specifically disclose that the rechargeable power supply is disposed intermediate the load plate and the base plate as now claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have located the rechargeable power supply of Catanzarite, as modified, to be located intermediate the load plate and the base plate as a matter of design preference, dependent upon the size of all the components of the damping assembly and where best the power supply would fit due to these constraints.

Regarding Claim 30, see column 2 lines 36-40 of Catanzarite.

Regarding Claims 34 and 35, Catanzarite, as modified, discloses most all the features of the instant invention as applied above, including the rechargeable power supply including a battery 3 (see Arsem) which is connected to the recharging arrangement through a rectifier bridge circuit 2 (see Figures 1 and 2 of Arsem). Arsem also goes on to disclose that the necessary resistance can be introduced into the circuit to vary the load applied to the shock absorber (see column 3 lines 3-5 of Arsem).

However, Catanzarite, as modified, does not disclose the specifics of a capacitor or a plurality of ultracapacitors connected to the recharging arrangement through the rectifier bridge circuit.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have introduced a single capacitor or a plurality of ultracapacitors into the recharging arrangement of Catanzarite, as modified, in order to (as Arsem suggests in the column 3 passage cited above) vary the load applied to the shock absorber to provide the best overall damping to the system.

Regarding Claims 42 and 43, Catanzarite, as modified, discloses that the damper controller 42 is attached to one of the set consisting of the base plate and the load plate 11 (see Figure 1 of Catanzarite, which shows controller 42 attached to load plate 11 through the seat base).

4. Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent no. 5,652,704 to Catanzarite in view of U.S. Patent No. 3,559,027 to Arsem as applied to claims 21-24, 29, and 30 above, and further in view of U.S. Patent No. 4,080,636 to Ravizza.

Regarding Claim 26, Catanzarite, as modified, disclose most all the features of the instant invention as applied above, except for the specifics of the piezoelectric generator being formed as a laminate of crystals, having an upper and lower surface.

Ravizza is relied upon merely for his teachings of a piezoelectric generator 68 (see Figure 2a) formed as a laminate of crystals having an upper surface 72/50 and a lower surface 48 (see column 6 lines 21-34) used in a damping isolation system.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the piezoelectric generator of Catanzarite, as modified, to be formed as a laminate of crystals having top and bottom surfaces as suggested by Ravizza in order to allow this type of recharging arrangement to be firmly and more securely attached to the equipment on which it is to be mounted. Again, as long as the piezoelectric generator is firmly secured to its respective equipment, the form of the generator is arbitrary.

Regarding Claims 27 and 28, Catanzarite, as modified, disclose most all the features of the instant invention as applied above, except for the specifics of the location of the piezoelectric generator with respect to the load plate, base wall, and base plate.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the piezoelectric generator of Catanzarite, as modified, to be located with respect to the load plate, base wall, and base plate as claimed, as a matter of design preference, dependent upon the design constraints of the equipment utilizing the isolation system, the size and dimensions of the generator itself, etc. As long as the generator is mounted in such a way to provide its recharging function, its location can be anywhere throughout the system.

Allowable Subject Matter

5. Claim 25 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims (as consistent with the examiner of the parent

application's indication of such allowable subject matter in his office action issued November 5, 2003).

Response to Arguments

6. Applicant's arguments filed September 11, 2006 have been fully considered but they are not persuasive.

Firstly, applicant argues that neither the Catanzarite or the Arsem patent disclose any form of self-powered damping system. In particular, applicant contends that Catanzarite discloses a damping system that requires a power source but does not disclose the inclusion of any form of recharging arrangement.

In response to this argument, the examiner contends that the damper and controller 42 of Catanzarite both utilize a battery 21, which is certainly capable of being recharged, and thus this battery is readable as a "rechargeable power supply". Therefore, along these lines, at least the Catanzarite reference does disclose a form of self-powered damping system.

Applicant then goes on to argue that the Catanzarite reference does not disclose a recharging arrangement in communication with the rechargeable power supply. The examiner agrees. It is for this reason that the Arsem reference was utilized in the 103 rejection above to provide the teachings of such a recharging arrangement.

Applicant then argues that the Arsem patent discloses no more than the possibility that a piezoelectric generator could be attached to a shock absorber and thus

does not disclose a damper controller including a rechargeable power supply in communication with a recharging arrangement comprising a piezoelectric generator.

In response to this, the Arsem reference is not being relied upon to teach a damper controller including a rechargeable power supply, rather the Catanzarite reference, as rejected above, discloses such a controller 42 and a rechargeable power supply 21. Arsem is being relied upon to teach a shock absorber which can use a piezoelectric generator therein to recharge a rechargeable power supply (see column 1 lines 55 et al of Arsem, which alludes to this). Thus, since the two shock absorbers of the references are similar in structure, the examiner contends that adding a piezoelectric generator to the shock of Catanzarite to provide the claimed recharging arrangement would not be beyond the realm of one of ordinary skill in the art to employ. Thus, when these references are combined, Catanzarite and Arsem do arrive at applicant's invention.

Next applicant argues that Claims 21 and 29 have been amended to clarify that all of the recited elements of the self-powering damping system of the invention are co-located in between the load and the base plates. And thusly, there is no suggestion in Catanzarite of including a battery inside a damper controller located between the base plate and the load plate to be isolated. And further, that the idea of locating a battery between the base and load plates is clearly not contemplated by Arsem either.

In response to this, Claim 21 only requires that the damper controller be located intermediate the load plate and the base plate. And as clearly shown in Figure 1 of the Catanzarite patent, damper controller 42 is located between load plate 11 and base

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plate 13 and thus, this new claim limitation is met. Then with respect to Claim 29, applicant then claims that the rechargeable power supply is also located between the load plate and the base plate. While Catanzarite discloses battery 21 being connected to a wiring harness connected to controller 42 (see column 3 lines 4-18), he does not specifically disclose the claimed location between the load plate and the base plate. However, the examiner contends that one of ordinary skill in the art would locate the rechargeable power supply in a space, such as between the load and base plates, where the power supply would best fit given the other equipment size constraints of the assembly. As long as the rechargeable power supply is adequately placed within the assembly, its location therein is essentially arbitrary.

Next applicant argues that the Ravizza patent does not cure the deficiencies of the Catanzarite and Arsem patents with respect to Claim 21. Applicant contends that the Ravizza reference does not discuss the use of a piezoelectric generator in conjunction with an isolation or damping system.

In response to this, the examiner wishes to point out that this Ravizza reference is merely being relied upon for teaching the claimed type of piezoelectric generator for damping vibrations. Contrary to applicant's arguments, the examiner maintains that the Ravizza patent does teach the use of a piezoelectric generator in a damping assembly (see at least the abstract of the patent). So while the damping assemblies of the Catanzarite, Arsem, and Ravizza patents may be different, they all disclose means for regulating vibration in some sort of damping configuration.

And lastly, regarding new Claims 42 and 43 and applicant's remarks corresponding to those, see the rejections of these claims in paragraph 3 above.

It is for these reasons that the rejections above have been maintained.

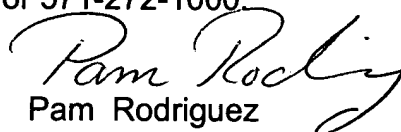
Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pam Rodriguez whose telephone number is 571-272-7122. The examiner can normally be reached on Mondays 5:30 AM -4 PM and Tuesdays 5 AM -11 AM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jim McClellan can be reached on 571-272-6786. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Pam Rodriguez
Primary Examiner
Art Unit 3683

9/19/06

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